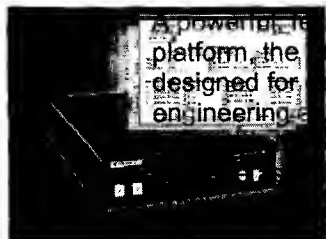
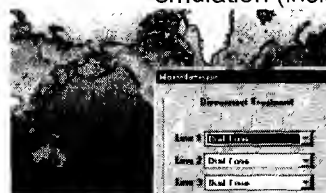




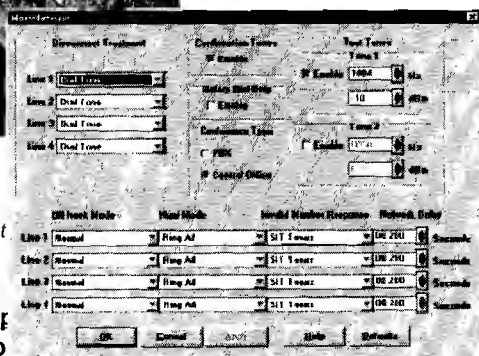
## Add "muscle" to your telecom testing



A powerful, feature-rich, telecommunications platform, the Telephone Line Emulator (TLE) is designed for demanding production test and design engineering applications. The TLE's modular design allows you to select only the capabilities you need, and your requirements change. The base unit simulates the North American telephone network, and the optional Windows® configuration software enables easy and extensive programmability of call progress tones, ring signal, impairments, attenuation, impedances, Type 1/2/3 Caller ID, and more. Add-on modules allow more advanced simulation, automated testing, and international signaling emulation (including complex impedances and Caller



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"global"  
with our internat



### TLE Power Presentation

Download and view on your system. The Windows interface makes programming easy. Requires Powerpoint Version 7 for Windows 95, and WinZip or WinZip.

#### Four loop start lines:

- Each line has independently programmable characteristics.

#### Interesting in evaluating the TLE?

- Supports two simultaneous, independent calls.

- Provides fully balanced battery feed and sinusoidal

To familiarize yourself with the TLE's powerful feature set, we have made available the same software that runs (

- Operates in either 4-port, or dual 2-port modes.

#### Software Download:

##### Network Simulation:

After you download and install the TLE software on your PC, you will be able to view all the settings used to program the Base mode simulates the North American Telco environment.

To download, select the link below and save the file to a temporary location on your hard disk. Double click on the "setup.exe." provides extensive programmability of call progress tones and ring frequencies.

This will install a working copy of the TLE-PC Software on your computer. The application will initially be running "Base" mode. To access either the Advanced Simulation Software Module (TLE-ADV), or the International Module (TLE

##### Configurability:

- Advanced Test and International software upgrades
- Can support storage of 16 configurations.
- Configuration of the TLE is via a Windows software package provided with the unit.

#### Download TLE Software

#### User Manuals:

Two TLE user manuals are currently available in .pdf format. The basic TLE manual includes operating instructions.

#### **Ringing Features:**

#### **Manual Download Page**

- CO grade SLICs
- 20 to 80 Vrms sine wave balanced ringing over 17 Hz to 70 Hz, 3 REN drive.
- Ring cadence is programmable.
- 600 ohm/900 ohm selectable line impedance

#### **Call features:**

- Three programmable numbers per line
- Programmable attenuation
- Call progress tones are programmable in frequency, amplitude and cadence
- Supports Caller ID, Spontaneous Call Waiting ID with Disposition
- Programmable Caller ID and SIT frequencies and amplitudes
- Programmable test tone frequencies and amplitudes
- Programmable call timings
- Programmable line impedance
- Voice messaging

#### **Product features:**

- DSP-based hardware
- Upgradeability via software modules
- Use a PC to create, store, and download configurations
- World-wide operation – 100 to 240 VAC input power range
- Front panel status display
- Audio port for monitoring audio on any line
- CE/NRTL approvals

#### **Add-On Software Modules:**

#### **Advanced Simulation:**

- Easily simulate echo, white noise, satellite delay, and many other network impairments and conditions
- Enable/disable Caller ID after every ring
- Enable/disable DTMF detection
- Stores 16 configurations internally
- Signal level measurement

#### **International:**

- Generates National Call Progress Tones, Ringing frequencies, and Ringing cadences.
- Metering Tones, 12 and 16 kHz
- 12 Predefined Country Settings
- Stores 16 configurations internally (Australia, Brazil, France, Germany, Ireland, Japan, Korea, Netherlands, Singapore, Sweden, UK, US/Canada)
- Simulates calls between country configurations

#### **NEW International Caller ID:**

- Provides international Caller ID protocols used in Australia, France, Germany, Netherlands, Singapore, Sweden, UK, and other countries supporting FSK-

and DTMF-based Caller ID.

**Automated Test:**

- Cut your product costs by reducing test time and eliminating the cost of building custom testers.
- Reduce the number of customized components used in your production test or development lab environments.
- Improve your testing efficiency by being able to quickly change test parameters.
- Automate your testing to shorten test time.
- Control the TLE directly through the serial port using an API.
- Download a test script to speed repetitive testing.
- Provides programmable frequency sweep tone.
- Ability to encode, decode and display DTMF signals and rotary dialed digits.

**Ordering Information:**

Part Number	Description	Notes
TLE-A-01	Telephone Line Emulator (Base Hardware Unit)	
TLE-ADV	Advanced Test Emulation Software Module	
TLE-TEST	Automated Test Software Module	
TLE-INTL	International Calling Module	
TLE-ICID	International Caller ID Module	Must have or purchase TLE-INTL

TLE Specifications

**North American Simulator Representatives and Distributors**

**International Simulator Distributors**

North America	Europe	Asia	Australia	South America	Other
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## TLE Specifications

AC Power	100-240 VAC, 50/60 Hz 0.6A
Fuse (User Serviceable)	T2.0H (Time delay, 2 A, high interrupt capability), 5 X 20 mm, 2 ea.
<b>Telephone Interface</b>	
Loop Current	10 to 70 mA in 1 mA increments
Battery Source	48 VDC $\pm$ 5V
Ringing Source	20 - 80 VAC in 5 V increments
Ring Trip	> off-hook detect time
Ring Cadence	up to 3 cycles set in 5 ms increments
on cycle	0 - 3.0 S
off cycle	0 - 6.3 S
Ring Frequency	17 - 70 Hz in 1 Hz increments
Impedance	600 ohm + 2.2 microF or 900 ohm + 2.2 microF
Insertion Loss	4.0 $\pm$ 1.0 dB @ 1000 Hz when both ports are terminated into the selected impedance
Attenuation	4 to 60 dB in 1dB steps
<b>Call Progress Tones</b>	Tone levels are referenced to selected impedance. Single or dual frequencies from 200 to 3000Hz, 1Hz resolution
	Amplitude range is -6 to -60 dBm
<b>Audible Ringback</b>	440 Hz and 480 Hz $\pm$ 5% @ -19 $\pm$ 3dBm per tone
<b>Dial Tone</b>	350 Hz and 440 Hz $\pm$ 5% @ -13 $\pm$ 3 dBm per tone (default)
<b>Busy Tone</b>	480Hz and 620Hz $\pm$ 5% @ -24 $\pm$ 3 dBm per tone (default)
<b>Reorder Tone</b>	480 Hz and 620 Hz $\pm$ 5% @ -24 $\pm$ 3 dBm per tone (default)
<b>Special Test Tone</b>	1004 Hz $\pm$ 5% @ -24 $\pm$ 3 dBm (default)
<b>Dialing Characteristics</b>	
Rotary Detection	8 - 22 PPS
percent break range	40 to 80% (LSSRGR6.3.4.6)
min break time	18 ms
max break time	100 ms

min make time	9 ms
max make time	75 ms
interdigit time	300 ms minimum
<b>DTMF Detection</b>	
frequency accept	$\pm 1.5\% \pm 2$ Hz
frequency reject	$\pm 3.5\%$
tone on time	40 ms minimum
tone off time	40 ms minimum
amplitude	+5 to -24 dBm per frequency
twist	6 dB or less
<b>Temperature Range</b>	
Operating	0° C to +40° C
Storage	-40° C to +55° C
<b>Humidity</b>	Maximum humidity is 85% non-condensing
<b>Altitude</b>	Up to 2,000 meters
<b>Regulatory</b>	
US (UL)	
FCC Part 15	Conducted & Radiated Emissions
UL 3111-1	Safety requirements for Electrical Measuring and Test Equipment
Canada (CSA)	
ICAN CRCc1374	Conducted & Radiated Emissions
CSA C22.2 No. 1010-1	Safety Requirements for Electrical Equipment for Measuring, Control and Laboratory Use.
Europe (CE)	
EN55022	Conducted & Radiated Emissions
EN61000-3-2/3	Harmonic Emissions and Voltage Fluctuations
EN61010	European Safety Requirements for Electrical Equipment for Measuring, Control, and Lab use.
IEC 1000-4-2	Electrostatic Discharge Susceptibility (ESD)
IEC 1000-4-3	Radiated Immunity
IEC 1000-4-4	Electrical Transients
<b>Mechanical Specifications</b>	
Dimensions	10.0" W x 13.0" D x 2.85" H
Weight	7 lbs maximum

Line 1 Channel Number	Line 2 Channel Number	Line 3 Channel	Line 4 Channel	Line 5 Channel	Line 6 Channel
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